

Enclosure 2
December 2009 Identification of ARARs Letter

The attached Enclosure 1 summarizes the potential ARARs identified to date by EPA for the Portland Harbor Site. The ARARs identified in Enclosure 1 should be used during the development, screening and detailed evaluation of remedial action alternatives in the draft Feasibility Study (FS) for the Portland Harbor site. EPA will make a final determination regarding ARARs at the time of the Record of Decision (ROD) for the Portland Harbor site. Because the LWG raised specific comments about the application of Safe Drinking Water Act standards and Ambient Water Quality Criteria to the Portland Harbor Site, EPA's rationale for identifying them as ARARs is provided below.

I. Introduction

Chemical specific ARARs identified for the Portland Harbor site include non-zero maximum contaminant level goals (MCLGs) and maximum contaminant levels (MCLs) promulgated under the Safe Drinking Water Act (SDWA) and aquatic life and human health water quality criteria (AWQC) developed and published in accordance with Sections 303 and 304 of the Clean Water Act (CWA) or promulgated state numeric or narrative water quality standards, whichever is more stringent. EPA's determination regarding the application of MCLGs/MCLs and AWQC is provided below.

MCLGs/MCLs and AWQC are relevant and appropriate for use as performance standards for groundwater and surface water at the site based on the information developed at the Site to date. Analysis of surface water samples (water column) collected at the Portland Harbor site identified only one chemical (bis 2-ethylhexyl phthalate) above the SDWA MCL. In addition, tapwater PRGs were exceeded for five chemicals (bis 2-ethylhexyl phthalate, certain PAHs, PCBs, total dioxin TEQ and arsenic). Chemical analysis of surface water samples collected at the Portland Harbor site also shows that ambient water quality criteria for the protection of aquatic life and human have been exceeded. Chronic AWQC for the protection of aquatic life have been exceeded in surface water for aluminum, zinc, butyltin ion, PCBs and DDT. Fish consumption AWQC have been exceeded in surface water for 23 chemicals including arsenic, bis 2-ethylhexyl phthalate, PCBs, dioxin, certain PAHs and certain organochlorine pesticides.

Groundwater samples were taken in the river in front of nine facilities known to have groundwater contamination exceeding screening criteria at the top of the river bank. The samples were taken to determine whether groundwater plumes from upland facilities were discharging to the river. Only one round of sampling was performed, thus, limited information exists to characterize concentrations that river receptors may be exposed to. The samples were taken from 0 to 4 feet in depth. The results of this analysis demonstrate that chemicals are present in groundwater at or near the point of discharge to the Willamette River at concentrations that exceed SDWA MCLs, chronic AWQC and fish consumption AWQC for the protection of human health. These data generally confirm that contaminated groundwater plumes have migrated off the upland facilities and are

discharging to the river and that benthic organisms are being exposed to contaminants at concentrations exceeding regulatory levels.

The designated uses of the lower Willamette River are the propagation of fish and wildlife, ingestion of fish living in the surface water, recreational uses, and potential drinking water supply. The lower Willamette River provides habitat for species listed as threatened under the Endangered Species Act (ESA) and other special status species under other state or federal programs.

The environmental media affected by releases of hazardous substances in the Site are groundwater, surface water, and sediment. Groundwater plumes are contaminating sediment and discharging to surface water. Surface water too is being impacted by product or contaminated sediment. The purposes for which the AWQC were developed, in most cases and stated most generally are protection of aquatic organisms and human health.

Although the human health and ecological risk assessments have not been finalized, preliminary findings from the risk assessment are that there is an unacceptable risk to human health and the environment from releases to surface water, groundwater (which includes the water known as transition zone water or pore water where aquatic organisms live and are exposed to contaminants), and sediment in the Portland Harbor Superfund Site. Preliminary review of the baseline human health and ecological risk assessments suggests that the greatest risk is the result of direct toxicity to aquatic organisms from exposure to hazardous substances in water (both surface and ground) and sediment, and human health risks due to eating fish that have been exposed and are accumulating hazardous substances from water and sediment.

Given that there is risk to human health and the environment from exposure to water (surface and ground) and sediment, response action is warranted at the Portland Harbor Superfund Site. Given that response action is warranted, and to the extent that “any hazardous substance, pollutant or contaminant will remain onsite” then any applicable or relevant and appropriate requirements under the circumstances of the release or threatened release of hazardous substances under federal or state law must be achieved at the completion of the remedial action. See 42 U.S.C. § 9621(d)(2)(A). Additionally, any remedial action shall require a level or standard of control which at least attains MCLGs and water quality criteria established under Section 304 or 303 of the Clean Water Act if they are relevant and appropriate under the circumstances of the release. 42 U.S.C. § 9621(d)(2)(A). The NCP, at 40 CFR Section 300.430(e)(2)(i)(B), states that MCLGs established under the Safe Drinking Water Act, that are set at levels above zero, shall be attained by remedial actions for ground or surface waters that are current or potential sources of drinking water, where the MCLGs are relevant and appropriate under the circumstances of the release. 40 CFR 300.430(e)(2)(i)(C) provides where the MCLG is set at zero, the MCL for that contaminant shall be attained.

Although MCLs are applicable as at the tap standards, they are “potentially relevant and appropriate during a CERCLA cleanup for ground or surface waters that are current or

potential sources of drinking water.” (ARARs Q’s & A’s: Compliance with New SDWA - OSWER Publication 9234.2-15/FS, August 1991). The Preamble to the NCP provides additional clarification on the application of MCLs to CERCLA remedial actions. The preamble to the NCP states at 55 Fed. Reg. on page 8753:

“MCLs, which are enforceable drinking water standards, and MCLGs above zero, are indeed relevant in considering cleanup levels for water that is or may be used for drinking. Although SDWA does not focus on general ground-water contamination, EPA believes that the MCL standards and non-zero MCLGs promulgated under SDWA are potentially relevant and appropriate to ground-water contamination. CERCLA sets out a mandate for remedies that are protective of use of ground water by private or public users. For example, section 104(c)(6) reflects Congress’s expectation that ground water should be restored to protective levels. If ground water can be used for drinking water, CERCLA remedies should, where practicable, restore the ground water to such levels. Such restoration may be achieved by attaining MCLs or non-zero MCLGs in the ground water itself, excluding the area underneath any waste left in place. Thus, these standards and goals may appropriately be used as cleanup levels in the ground water as well as for the delivery of drinking water by public water systems.”

The preamble to the NCP further states on page 8713:

Remedial action objectives and remediation goals should be set for appropriate environmental media, and performance standards established for selected engineering controls and treatment systems including controls implemented during the response measure. While points of compliance for attaining these remediation levels are established on a site-specific basis, as supported by some commenters, there are general policies for establishing points of compliance. For ground water, remediation levels should generally be attained throughout the contaminated plume, or at and beyond the edge of the waste management area when waste is left in place. For air, the selected levels should be established for the maximum exposed individual, considering reasonably expected use of the site and surrounding area. For surface waters, the selected levels should be attained at the point or points where the release enters the surface waters. (See preamble section on ARARs for further information on points of compliance.)

The groundwater discharging to the Willamette River and the surface water is potable and capable of serving as a potential drinking water source, thus, the expectation is that the resources will be protected and remediated to achieve such use. 40 CFR 300.430(a)(1)(ii)(F). In responding to comments on the final NCP, EPA confirmed that reliance wholly on institutional controls, including future treatment of groundwater, as a basis for not remediating groundwater to MCLGs was not acceptable because it would not protect users of groundwater that were not using publicly-supplied water. The same rationale would apply to drinkable surface waters. See 55 Fed. Reg. 8753 (March 8, 1990). Additionally, the fact that groundwater within the Portland Harbor Site significantly exceeds MCLs or non-zero MCLGs means action is generally warranted

and other chemical-specific ARARs may also be used to determine whether a site warrants remediation. See “Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions,” OSWER Directive 9355.0-30, April 22, 1991 and “Summary of Key Existing CERCLA Policies for Groundwater Restoration,” OSWER Directive 9283.1-33, June 26, 2009. .

Section 121(d)(2)(B)(i) of CERCLA provides: “In determining whether or not any **water quality criteria under the Clean Water Act (emphasis added)** . . . is relevant and appropriate under the circumstances of the release or threatened release, the President shall consider the designated or potential use of the surface or groundwater, the environmental media affected, the purposes for which such criteria were developed, and the latest information available.” When the Section 121(d)(2)(B)(i) factors are applied to federal recommended water quality criteria established under Sections 304 or 303 of the Clean Water Act or state-promulgated water quality criteria, the conclusion is that the more stringent of federal recommended or state-promulgated water quality criteria will be chemical-specific ARARs for the Portland Harbor remedial action. Both acute and chronic aquatic criteria would be either applicable or relevant and appropriate due to the designated uses of the Willamette River and affected media. Fish consumption criteria too would be applicable or relevant and appropriate for Portland Harbor due to the release of persistent bioaccumulative toxics found in groundwater, sediment, and fish tissue. Criteria developed to protect receptors both consuming fish and ingesting the water also would appear to be applicable or relevant and appropriate due to the potential future use of the lower Willamette River as a drinking water supply.

II. Application of MCLs at the Portland Harbor Site:

Non-zero MCLGs or MCLs will be ARARs for surface and groundwater at the Portland Harbor Superfund Site. Surface and groundwater sources discharging to the river must achieve these standards and remedial actions that will result in discharges to either surface water or groundwater will need to achieve these standards. Because the SDWA standards are only relevant and appropriate to groundwater or surface water that is a potential drinking water supply, SDWA standards are not considered relevant and appropriate in areas of sediment contamination alone where interstitial porewater is only impacted by partitioning from bulk sediment. Points of compliance for MCLs in groundwater are throughout the plume where standards are exceeded. For the portion of a groundwater plume that remains outside of an effective upland source control, the point of compliance for the in-water remedy would be in the plume downgradient of the source control measure. The point of compliance for MCLGs/MCLs in surface water will be determined using spatial integration methods consistent with use of the Willamette River as a drinking water supply. The Portland Harbor FS should consider the time to achieve MCLs throughout the contaminated groundwater plume and across the area of the contaminated groundwater plume. .

III. Application of AWQCs in the Portland Harbor Site.

AWQCs are considered applicable to discharges to surface water and contaminated groundwater discharging to surface water at the Portland Harbor site. Federal AWQCs are relevant and appropriate for cleanup standards for surface water from remedial actions to be taken at the Portland Harbor Site, more stringent state criteria are applicable standards. Surface water includes the transition zone within the sediment where aquatic receptors are exposed. As mentioned above, the more stringent of either the National Recommended Water Quality Criteria developed under Section 304(a) of the Clean Water Act or promulgated state criteria will be the ARAR. In addition to AWQCs (state or federal), other water quality standards adopted by the State of Oregon are also ARARs (designated uses and antidegradation policy).

A. Oregon Water Quality Standards:

The Oregon Department of Environmental Quality DEQ has developed criterion for toxic substances under OAR 340-041-0033. OAR 340-041-0033(2) states that “levels of toxic substances in waters of the state may not exceed the applicable criteria listed in Tables 20, 33A and 33B.” According to OAR 340-041-0033(2)(a), each value for criteria in Table 20 is effective until the corresponding value in Tables 33A or 33B become effective. Criterion specified in Tables 33A and 33B were adopted by the Oregon Environmental Quality Commission (EQC) on May 20, 2004 but have yet been approved by EPA. The status of each set of criteria as of this date is summarized below:

- Table 20: The introduction to Table 20 states that “the concentration for each compound listed in Table 20 is a criterion not to be exceeded in waters of the state in order to protect aquatic life and human health.” Because Table 20 criteria apply to “waters of the state in order to protect aquatic life and human health,” these criteria are currently in effect and are considered to be applicable to surface water at the Portland Harbor site.
- Table 33A: The introduction to Table 33A states that the EQC adopted the Table 33A criterion on May 20, 2004 to become effective February 15, 2005. However, because EPA has not approved these criteria, “Table 33A criteria may be used in NPDES permits but not for the section 303(d) list of impaired waters. Due to this limitation, Table 33A criteria should be considered relevant and appropriate to the Portland Harbor site. For NPDES purposes, DEQ applies the Table 33A criteria as a matter of state law. These criteria are the same as or more stringent than the Table 20 criteria.
- Table 33B: The introduction states that the EQC adopted the Table 33B criteria on May 20, 2004 to become effective on EPA approval. However, because EPA has not approved these criteria, the Table 33B criteria may not be used until they are approved by EPA. Due to this limitation, Table 33B criteria are not ARARs for the Portland Harbor site but may be used as “to be considered” values.
- Table 33C: The introduction to Table 33C states that the concentration for each compound listed in Table 33C is a guidance value that can be used in application

of Oregon's Narrative Toxics Criteria (340-041-033(1) to waters of the state in order to protect aquatic life. Chemicals listed in Table 33C are pollutants for which EPA did not develop recommended regulatory criteria. At this time, DEQ has not developed policies or guidance on the use of Table 33C guidance values. Because these values are specified as "guidance," and because DEQ has not determined how to use these values, Table 33C values are not ARARs for the Portland Harbor site but may be used as "to be considered" values.

B. National Recommended Water Quality Criteria:

As stated above, Section 121(d)(2)(A) requires that remedial actions selected by EPA must achieve nationally recommended water criteria where relevant and appropriate to the circumstances of the release at the site. If the State has adopted water quality standards as stringent or more stringent than the national criteria, then there may be a basis for determining the state criteria, not the national criteria, are the ARAR, but if the state criteria is less stringent, then for any given contaminant, the national recommended water quality criteria will be the ARAR.

C. Application of AWQC at the Portland Harbor Site:

1. Surface Water:

For surface water, points of compliance for AWQC should be consistent with the application of water quality standards under the Clean Water Act. These standards are applied at different temporal scales based on the type of standard.

- Aquatic Life Criteria - Chronic AWQC measured as a 96 hour average must not be exceeded more than one time in three years and acute AWQC must not be exceeded as a single point measurement more than one time in three years. Consistent with the CWA and the assumptions in the baseline ecological risk assessment, compliance with aquatic life AWQC must be met on a point by point basis.
- Human Health Criteria – AWQC for the protection of human health are based on long-term exposures. As a result, it is appropriate to consider spatial and temporal averaging in the development of points of compliance for surface water. In addition, EPA acknowledges that for some chemicals (e.g., PCBs), background conditions preclude meeting human health AWQCs. In this case, EPA's policy on background should be used to waive AWQCs that cannot be achieved due to background conditions. The Portland Harbor FS should evaluate the ability of remedial action alternatives to achieve human health AWQCs in the future and over the appropriate spatial scale (e.g., one river mile basis for smallmouth bass consumption).

2. Groundwater and Transition Zone Water:

The NCP states that AWQCs for surface water must be met at the point of groundwater discharge to surface water. For both the application of aquatic life criteria and human health criteria, the point of groundwater discharge to surface water is considered to be 0 – 10 cm. This is the estimated depth of the biologically active zone and the depth to which benthic organisms may be exposed.

- Aquatic Life Criteria - Aquatic life AWQC should be applied on a point by point basis at the 0 – 10 cm depth. Regarding temporal averaging, chronic AWQC measured as a 96 hour average must not be exceeded more than one time in three years and acute AWQC must not be exceeded as a single point measurement more than one time in three years. For chronic AWQC, the analysis should be on a point by point basis.
- Human Health Criteria - For human health AWQC, the point of groundwater discharge to surface water is also considered to be 0 – 10 cm. Any temporal and spatial averaging should consider the exposure assumptions in the baseline risk assessment. However, where the area requiring remediation (e.g., SMA) is smaller than the exposure area AWQC should be met in the area requiring remediation.